EPA/530-SW-87-012

QUESTIONS AND ANSWERS REGARDING

THE JULY 14, 1986

HAZARDOUS WASTE TANK SYSTEM

REGULATORY AMENDMENTS

Contact: The RCRA Hotline at (800) 424-9346 or
(202) 382-3000

or

Chester J. Oszman Jr.
AB/PSPD (WH-563)
Office of Solid Waste
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460
(202) 382-4499

OCTOBER 1987

DISCLAIMER

This report was prepared under contract to an agency of the United States Government. Neither the United States Government nor any of its employees, contractors, subcontractors, or their employees makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use of or the results of such use of any information, apparatus, product, or process disclosed in this report, or represents that its use by such third party would not infringe on privately owned rights.

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

INTRODUCTION

The U.S. Environmental Protection Agency (EPA) has recently made significant changes to its regulatory program for hazardous waste tank systems. These changes include many new requirements for owners and operators. This document is intended to provide answers to many of the questions that are likely to arise concerning compliance with the new requirements. In addition, the "Technical Resource Document for the Storage and Treatment of Hazardous Waste in Tanks Systems," 12/86, NTIS, PB #87-134391, (703) 487-4650, $36.95, provides guidance relating to the technical requirements for tank systems.

The questions and answers listed below do not include all of the implementation issues or permitting questions that may arise. In addition, this document is not intended to dictate a single response to any given situation. The appropriate permitting authority (EPA Regional Offices or authorized States) will make many decisions regarding implementation of the tank rule on a case-by-case basis. The opinions, findings, and conclusions expressed here are based on the best information currently available. As new data and information are obtained, this document may be revised to reflect the experience with implementation and permitting issues.

Some issues concerning the tank system regulatory amendments that are not discussed in this document, will be discussed in an upcoming Federal Register notice. The notice will provide clarifications regarding:

(1) Interpreting the regulatory meaning of welded flanges;

(2) Determining the applicability of secondary containment to compression joints, PVC pipe, etc.; and

(3) Determining the applicability of sealless valves.

I. SCOPE AND APPLICABILITY

1. Promulgation and Effective Dates.

On July 14, 1986 (51 FR 25422), EPA promulgated amendments to the regulations for tank systems accumulating, storing or treating hazardous waste. These rules establish technical standards and operating procedures for the owners and operators (o/o) of permitted, interim status, 90-day accumulation and small quantity generator tank systems.[1] In general, the amendments took effect on January 12, 1987.[2] There are two exceptions to this effective date. First, the exclusions for reclaimed secondary materials returned to the original process, became effective on July 14, 1986.[3] Second, generators of between 100 and 1,000 kg/month of hazardous waste who accumulate the waste in quantities exceeding 6,000 kg or accumulate waste for more than 180 days (or for more than 270 days if the waste is shipped over 200 miles for disposal) became subject to all of the regulatory amendments on March 24, 1987.

2. Who is affected by the July 14, 1986 regulatory amendments?

Not all owners and operators of facilities that use tank systems for storing or treating hazardous waste will be immediately affected by the July 14 tank rule. The criteria to determine a compliance schedule for any particular facility is dependent on (1) the type of tank system at the facility, (2) the RCRA authorization status of the host State, and (3) the RCRA permit status of the facility (or unit).

Two procedural aspects of the regulation will need to be carefully addressed. First, certain portions of the July 14 rule were promulgated pursuant to authority under the Resource Conservation and Recovery Act (RCRA), while other portions were promulgated pursuant to provisions added by the Hazardous and Solid Waste Amendments of 1984 (HSWA). This "two authority" promulgation is potentially confusing in regulating different types of facilities in authorized and unauthorized States. Second, the concept of existing and new tank systems being defined by the July 14, 1986 promulgation date is different than the established system for defining existing and new facilities for purposes of determining eligibility for interim status.

HSWA-Provisions

The sections of the tank rule which are promulgated pursuant to HSWA authorities are the following:

---

1. "Small quantity generators" refer to generators of 100 to 1,000 kg/month of hazardous waste (see page I-3).

2. The technical amendments revise 40 CFR Parts 260, 261, 264, 265, 270, and 271.

3. See 40 CFR 261.4(a)(8)

- interim status requirements applicable to tank systems owned and operated by small quantity generators (Section 3001(d));

- leak detection requirements for all new underground tank systems (Section 3004(o)(4)); and

- technical and permitting standards for underground tanks that cannot be entered for inspection (Section 3004(w)).

These provisions are effective on the effective dates described in Section 1 above in all States, regardless of the authorization status. (For these provisions States must modify their programs by July 1, 1989 (see 40 CFR 271.21(e)(2)(iii))). Until a State is authorized, tanks in these categories must comply with the Federal regulations and with any applicable State requirements.

Pre-HSWA Provisions

All sections of the July 14 tank rule when applied to aboveground, onground, inground, and underground (those that can be entered for inspection) tank systems are promulgated pursuant to RCRA (or Pre-HSWA) authorities. Tank systems in these categories, which are located in unauthorized States, must meet all Federal requirements upon the effective date of the regulations. Tanks in these categories in authorized States are not required to comply with today's rule until such time as the authorized State amends its rule (by July, 1988 or 1989; see 40 CFR 271.21(e))

Definitions

A "tank system" includes a hazardous waste storage or treatment tank and its ancillary equipment and secondary containment system. "Ancillary equipment" means any device including, but not limited to devices such as piping, fittings, flanges, valves, and pumps, that are used to distribute, meter, or control the flow of hazardous waste from its point of generation to a storage or treatment tank, between hazardous waste storage or treatment tanks to a point of disposal onsite, or to a point of shipment for disposal off-site. Tanks and ancillary equipment are all "components" of a tank system.

Exceptions and Limitations

There are several exceptions and limitations to the general requirements for hazardous waste tank systems.

- Tank systems that are used to store or treat hazardous waste which contains no free liquids[4] and that are situated on an impermeable floor, and tank systems, including sumps, that

---

4. To demonstrate the absence of free liquids, EPA Method 9095 (Paint Filter Liquids Test) must be used (as described in EPA Publication No. SW-846).

- serve as part of a secondary containment system are exempt from the requirements to have secondary containment.[5]

- Tank systems used to manage recycled materials in a closed-loop recycling system[6] where secondary materials are returned to the original process and tank systems used as totally enclosed, wastewater treatment, elementary neutralization or emergency units (as defined in 40 CFR 260.10)[7] are exempt from the hazardous waste tank system standards.

- Only limited requirements will apply to generators of between 100 and 1,000 kg/month of hazardous waste.[8]

- Conditionally exempt generators (i.e., less than 100 kg/month) are subject to the tank regulations only if accumulation exceeds 1,000 kg and, after accumulating 1,000 kg, exceeds 180 days.[9]

- Generators may accumulate hazardous waste for less than 90 days provided they comply with Part 265, Subparts C, D, and J (except §§265.197(c) and 265.200) and comply with §265.16. The less-than-90-day accumulators need not comply with Part 265, Subparts G and H (as required in §265.197) except they must comply with §§265.111 and 265.114. In addition, the 90-day accumulation tank must be labeled "hazardous waste".[10]

- Generators of acutely hazardous waste[11] are subject to the tank system requirements only if they generate more than one kg/month or a total of more than 100 kg of waste residue or contaminated soil from a spill of acutely hazardous waste or if they accumulate more than one kg of waste or more than 100 kg of acutely hazardous waste residue or contaminated soil.[12]

---

5. 40 CFR 264.190 and 265.190.

6. See 40 CFR 261.4(a)(8) for closed-loop recycling and see 40 CFR 261.6 for requirements for other recycled materials.

7. 40 CFR 261.4(a)(1) and (2); 264.1(g) and 265.1(c); and the Clean Water Act, Sections 402 and 307(b).

8. 40 CFR 262.34 and 265.201.

9. 40 CFR 261.5(g)(2) states "the time period of §262.34(d) for accumulation of waste on-site begins for the conditionally exempt when accumulation exceeds 1,000 kg".

10. 40 CFR 262.34.

11. Acutely hazardous waste is defined as F020, F021, F022, F023, F026 and F027 wastes and wastes listed in 40 CFR 261.33(e).

12. 40 CFR 261.5(c).

3. What accumulation limitations apply to generators of between 100 and 1,000 kg/month of hazardous waste?

Generators of between 100 and 1,000 kg/month may accumulate hazardous waste without meeting the full regulatory requirements for an interim status accumulation facility for 180 days (or 270 days if the TSDF they ship to is greater than 200 miles away), provided that:[13]

- the total amount accumulated is less than 6,000 kg;
- the generator complies with Part 265, Subpart C and §265.201 and the special requirements for contingencies at §262.34(d)(5); and
- the accumulation tank is labeled "hazardous waste".

4. What is the status of the tank systems at a new TSD facility if a RCRA permit is issued by EPA or an authorized State after July 14, 1986 but before the effective date of the new Federal tank system regulations?

The permit should be written to incorporate the currently effective regulations. For a state-issued permit, an applicable requirement is a state statutory or regulatory requirement which takes effect prior to final administrative disposition of a permit.[14] However, §270.32(b)(2) (see 50 FR 28742) requires each permit to contain terms and conditions as the State Director determines necessary to protect human health and the environment. The State Director may incorporate the new tank regulations under this provision, if appropriate or allowed under State law.

When the permit is reviewed (in 10 years or less) under §270.50, all regulations in effect at the time of the review must be incorporated into the reissued permit per §270.32(d) including the July 14, 1986 tank system regulations. The 15 year age limit phase-in for secondary containment retrofitting for "existing" tank systems would not apply to tank systems built after July 14, 1986 because the tank systems are, by definition, "new" tank systems.[15]

Under the current regulations, a permit may be modified, on the basis of subsequent regulatory changes, only at the request of the permittee.[16] However, EPA proposed a change to this regulation in the March 28, 1986 Federal Register. Under the proposed §270.41(a)(3), permits may be modified by EPA or a State when the standards or regulations on which the permit was based have been changed by statute or amended standards or regulations.

---

13. 40 CFR 262.34 and 265.201.

14. 40 CFR 270.32(c).

15. 40 CFR 264.193(a) and 260.10.

16. 40 CFR 270.41, 270.43 and 124.5.

5. How would interim status and 90-day accumulation tank systems be regulated if they are installed between July 14, 1986 and the effective date of the new tank system regulations?

Before the effective date of the hazardous waste tank system regulatory amendments, interim status tank systems may be installed (40 CFR 270.72, changes during interim status) under the regulations for Subpart J in effect at that time. However, since these tank systems meet the definition of new tank systems because they were installed after July 14, 1986, they must comply with all of the standards for new tank systems on the effective date.[17] Therefore, if the tank system was installed under the pre-July 14 standards, it must be retrofitted to comply with the new tank system standards in §265.193 by the effective date (i.e., 1/12/87). This is only true if the tank system is located in a State with a federally-run RCRA program as of January 1987.

6. How does the July 14, 1986 hazardous waste tank system rule relate to other rules affecting tanks?

On October 9, 1986, EPA published a proposed rule that would require generators of between 100 and 1,000 kg/month of hazardous waste, who accumulate less than 6,000 kg of the waste for less than 180 days (or 270 days), to meet requirements similar to those contained in the July 14 rule.[18] EPA is evaluating public comments on this proposal.

Certain other substances stored in underground tanks are regulated under Subtitle I of RCRA. Any owner or operator who stores petroleum or a substance defined as a hazardous substance under Superfund (other than hazardous waste) in an underground tank must meet the requirements of the (Subtitle I of RCRA) Underground Storage Tank (UST) program. This program does not apply to underground storage tank systems that contain RCRA hazardous waste. Certain provisions of the UST program currently are in effect, such as a provision limiting new installations of unprotected underground tanks. The Agency has proposed additional regulations under Subtitle I of RCRA (see 52 FR 12662; April 17, 1987).

7. What types of tank systems qualify for the closed-loop recycling exclusion and how should releases from these tanks be handled?

The July 14, 1986 regulatory amendments make provisions for excluding wastes managed in closed-loop recycling systems from the definition of solid waste (40 CFR 261.4). Because the materials managed in these tank systems are not wastes by definition, the tanks are not required to meet the technical standards for hazardous waste tank systems. Tank systems are considered to constitute a closed-loop recycling process if they meet the following conditions:

---

17. 40 CFR 265.192 and 265.193.

18. 51 FR 36342, October 9, 1986.

- Only tank storage is involved, and the entire process through completion of reclamation is closed by being entirely connected with pipes or other comparable enclosed means of conveyance.

- Reclamation does not involve controlled flame combustion (such as occurs in boilers, industrial furnaces, or incinerators).

- The hazardous secondary materials are never accumulated in such tanks for over twelve months without being reclaimed.

- The reclaimed material is not used to produce a fuel or to produce a material that is used in a manner constituting disposal.

- Secondary materials are returned after being reclaimed, to the original process in which they were generated where they are reused in the production process.

Releases from these closed-loop recycling systems may require corrective action. If the wastes are listed as hazardous, they lose the solid waste exclusion once the closed-loop system is breached. Consequently, the release would be subject to reporting requirements (e.g., reportable quantity pursuant to 40 CFR Part 302 or applicable action under the Spill Prevention Control and Countermeasures Program pursuant to 40 CFR Part 112) and may be subject to the corrective action requirements for solid waste management units if routine, systematic and deliberate.

II. TANK SYSTEM INTEGRITY ASSESSMENT

1. What existing tank systems must be tested for structural integrity and when must they be tested?

Owners or operators of interim status, accumulation, and permitted tank systems that were in operation or being installed[1] on or before July 14, 1986, and that do not have adequate secondary containment (as required in 40 CFR 264.193 and 265.193) must determine whether the tank system is leaking or unfit-for-use. These initial assessments must be completed by January 12, 1988.[2] In addition, owners or operators of tank systems without secondary containment that store or treat materials that are designated as hazardous wastes after January 12, 1987 must conduct an integrity assessment within 12 months after the date that the waste is designated as a hazardous waste.[3] EPA believes that allowing one year from the effective date of the regulations to complete the integrity assessment will afford sufficient time to ensure that proper methods and qualified personnel are used to conduct these tests. Furthermore, until secondary containment is provided, the tank system owner or operator must assess the integrity of the tank system annually[4] or under a schedule as specified in the permit.[5]

2. Does a facility with existing tank systems that is scheduled to receive a RCRA permit after 1/12/87 but before 1/12/88 have to supply a written assessment before it receives the permit or can the facility wait until 1/12/88 to complete the required assessment?

The July 14 tank system regulations contain several provisions concerning submission of a written assessment that must be meshed with the requirements for Part B applications. Section 270.16 requires a written assessment of the structural integrity and suitability for handling hazardous waste for each tank system as required under §§264.191 and 264.192 as part of the Part B permit application.[6] However, Section 264.191 requires the written

---

1. "Installation will be considered to have commenced if the owner or operator has obtained all Federal, State, and local approval or permits necessary to begin physical construction of the site or installation of the tank system and if either (1) a continuous on-site physical construction or installation program has begun, or (2) the owner or operator has entered into contractual obligations -- which cannot be cancelled or modified without substantial loss -- for physical construction of the site or installation of the tank system to be completed within a reasonable time." (40 CFR 260.10)

2. 40 CFR 264.191(a) and 265.191(a).

3. 40 CFR 264.191(c) and 265.191(c).

4. 40 CFR 264.193(i) and 265.193(i).

5. 40 CFR 264.193(i)(2).

6. 40 CFR 270.16.

assessment to be obtained and kept on file by 1/12/88 for existing tank systems.[7] Accordingly, a facility has until 1/12/88 to obtain a written assessment of the structural integrity of existing tank systems as required in §264.191. This would continue to be the case even if the facility is actively receiving a permit. If the permit is issued before 1/12/88 and the facility has not completed its assessment, a permit condition should require compliance with §264.191.

3. What must the initial assessment of an existing tank system's integrity determine and consider?

The initial integrity assessment must determine that the tank system is adequately designed, has sufficient structural strength, is compatible with the waste to be stored or treated, and will not collapse, rupture, or fail.[8] The assessment must, at a minimum, consider the following:

- Design standard(s), if available, according to which the tank and ancillary equipment were constructed;
- Hazardous characteristics of the waste that have been and will be handled;
- Existing corrosion protection measures;
- Documented age of the tank system, if available, or an estimate of the age; and
- Results of a leak test, internal inspection, or other tank integrity examination as appropriate for the tank system being assessed.

4. What must the subsequent integrity assessments of tank systems without secondary containment include and when must the assessments be conducted?

All tank systems without secondary containment (as required under §§264.193 or 265.193) must undergo a leak test or other integrity test on a regular basis. The leak test, or other integrity test, must assess the condition of both the tank and its ancillary equipment.[9]

Non-enterable underground interim status tank systems must be leak tested at least annually. Non-enterable underground permitted tank systems also must be assessed annually either through the use of a leak test or other integrity test method as approved or required by the Regional Administrator.

---

7. 40 CFR 264.191(a).

8. 40 CFR 264.191 and 265.191.

9. 40 CFR 264.193(i) and 265.193(i).

Other than non-enterable underground tanks, and all ancillary equipment, may be tested by using either a leak test or an internal inspection. With respect to interim status tank systems, leak tests or inspections of other than non-enterable underground tank systems must be conducted at least annually. With respect to permitted tank systems, the frequency of the leak test or internal inspection for other than non-enterable underground permitted tank systems must be sufficient to detect the potential for serious releases before they occur. The frequency is specified in the permit and should be based on the material of construction of the tank and its ancillary equipment, the age of the system, the type of corrosion or erosion protection used, the rate of corrosion or erosion observed in previous inspections, and the characteristics of the waste being stored or treated.

Internal inspections must be conducted by an independent, qualified, registered, professional engineer, and the schedule and procedure for the inspection must be adequate to detect obvious cracks, leaks and corrosion, or erosion that may lead to cracks and leaks.

EPA does not specify the techniques that must be used when conducting leak tests because the Agency recognizes that many factors influence the choice of an appropriate test method. These factors may include temperature, barometric and hydrostatic pressure variations, tank size and design, physical characteristics of the waste, variations in structural support provided by soil or fill material, and leak detector characteristics. EPA believes that the level of accuracy attainable by leak testing methods must be reviewed periodically as the technology improves. Consequently, EPA expects owners and operators to use the most reliable methods available to assess the integrity of their hazardous waste tank systems. Current methods should be capable of detecting leaks of 0.1 gallons per hour.

If a tank system is found to be leaking or unfit-for-use following an integrity assessment, the owner or operator must comply with the requirements for responding to leaks or spills (see 40 CFR 264.193(i)(5) and 265.193(i)(4); also, see question V.3.)

5. Who may perform and certify the initial tank system integrity assessment and subsequent annual assessments?

It is the owner or operator's responsibility to determine that his tank system is not leaking or unfit for use. When conducting the initial assessment of the integrity of tank systems without appropriate secondary containment, an independent, qualified, registered, professional engineer (IQPRE) must review and certify the owner or operator's written assessment of the tank system's integrity.[10] (The assessment can be written by any qualified person, whether or not a registered, professional engineer, but it must be reviewed and certified by an IQPRE.) The Agency believes that this initial integrity assessment must be certified by a person who does not have a conflict of interest or the appearance of a conflict of interest. Hence, employees of the owner or operator (e.g., those who receive their primary source of income from the o/o) are not judged to be "independent" and cannot, therefore, certify the initial integrity assessment.

---

10. 40 CFR 264.191(a) and 265.191(a)

Like initial assessments, subsequent tank system leak tests or internal inspections are the responsibility of the owner or operator. IQRPEs will conduct subsequent assessments and provide certification of the fitness of tank systems

6. Where must a record of the initial integrity assessment and any subsequent leak tests or integrity assessments be maintained?

The initial certified written assessment of tank system integrity (to be completed by January 12, 1988) and records of any subsequent tests or inspections must be kept on file at the facility where the tanks are located.[12] In addition, EPA maintains the right to request and inspect these assessments at any reasonable time.

7. Does the independent, qualified, registered, professional engineer or other certifying professional have to use the certification verbatim as written in Section 270.11(d).[13]

The EPA does not interpret the requirement to certify in accordance with §270.11(d) to require certifying individuals to use the §270.11(d) verbatim. In some cases, the language in the certification at 40 CFR 270.11(d) will not be appropriate for the tasks conducted by the independent specialists. For example, if an IQRPE is asked to review and certify an owner or operator's tank system design or tank assessment, a conflict develops because §270.11(d) asks the IQRPE to certify that the document and all attachments were prepared under his direction, which may not be true.

The "Technical Resource Document for the Storage and Treatment of Hazardous Waste in Tank Systems"[14] offers a solution. The Resource Document suggests an alternative certification which would satisfy the truthfulness provision in 40 CFR 270.11(d). It reads:

> "I, [Name] have supervised a portion of the design or installation of a new tank system or component located at [Address], and owned/operated by [Name(s)]. My duties

(continued on the next page)

---

11. 40 CFR 264.193(i)(1) and (2) and 265.193(i)(1) and (2).

12. 40 CFR 264.191(a) and 265.191(a); 264.193(i)(4) and 265.193(i)(3).

13. See the following sections for activities requiring certification - 264.191(a), 264.191(b)(5)(ii), 264.192(a), 264 192(g), 264.196(f), 265.191(a), 265.191(b)(5)(ii), 265.192(a), 265.192(a), 265.192(g), and 265.196(f).

14. Technical Resource Document for the Storage and Treatment of Hazardous Waste in Tank Systems, 12/86, NTIS, PB #87-134391, (703) 487-4650, $36.95. See p. 6-28.

were: [e.g., preinstallation inspection, testing for tightness, etc.], for the following tank system components [e.g., the tank, venting piping, etc.], as required by the Resource Conservation and Recovery Act (RCRA) regulation(s), namely, 40 CFR 264.192 [applicable paragraphs (i.e., a-f)].

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Some modification of the §270.11(d) language is expected in cases where the certifying professional (whether IQRPE, installation inspector, or corrosion expert) did not oversee or supervise the actual project, but only reviewed and/or certified the project.

8. To what extent can previous inspections or leak tests be used in providing initial assessments for existing tank systems?

An initial integrity assessment for existing tank systems that do not have secondary containment meeting the requirements of §264.193 or §265.193 must be obtained and placed in the operating record by January 12, 1988. The initial assessment, among other things, must consider results of leak tests, internal inspections, or other tank integrity examinations. Data from tests, inspections, or examinations performed after July 14, 1986 (the promulgation date of the revised tank system rules) can be used in providing the initial assessment for existing tank systems as long as the independent, qualified, registered, professional engineer is willing to make the appropriate certification. However, the date the leak test, internal inspection, or other integrity examination was performed becomes the anniversary date for subsequent leak tests, internal inspections, or other integrity exams to be performed as required in §264.193(i) or §265.193(i).

For tank systems to store or treat materials that become hazardous wastes subsequent to July 14, 1986 (i.e., newly regulated wastes), the leak test, internal inspection, or other integrity examination must be performed during the 12 month period prior to the due date of the integrity assessment. Again, the date the leak test, internal inspection, or other integrity examination was performed becomes the anniversary date to perform subsequent tests, inspections, or examinations.

9. Where the owner/operator cannot inspect the bottom of a tank (e.g., existing flat-bottom tank sitting on a concrete pad), is an inspection of the visible portions of the tank a satisfactory method for detecting leaks and corrosion under 40 CFR 264.195 and 265.195?

The intent of 40 CFR 264.195 and 265.195 is that all accessible and visible aboveground portions of the tank system be inspected at least once each operating day. In the case where the tank bottom is obscured from view (e.g., bottom sitting on a concrete pad) such an inspection is not required. However, special efforts should be made to carefully observe for any leakage around the base of the tank, possibly indicating releases from the tank bottom. Furthermore, when secondary containment is provided, the owner/operator must provide a leak detection system capable of detecting any release from the tank bottom.

III. MINIMUM DESIGN REQUIREMENTS FOR NEW TANK SYSTEMS

1. What design considerations must be followed for new tank systems?

Like owners or operators (o/o) of existing tank systems or components, owners and operators of new tank systems (including o/o of new accumulation tank systems) must obtain a written assessment, reviewed and certified by an independent, registered, professional engineer, attesting that the tank system has sufficient structural integrity and is acceptable for storing or treating hazardous waste. Owners or operators of new tank systems must submit this assessment to the Regional Administrator at the time of submittal of Part B permit application information, where applicable. Generators accumulating hazardous waste in new tank systems must maintain the assessment on file. The assessment must include, at a minimum, the following information:[1]

- Design standard(s) according to which tank(s) and ancillary equipment are constructed;
- Hazardous characteristics of the waste(s) to be handled;
- For new tank systems where the external shell of a metal tank or any external metal component of the system will be in contact with the soil or with water, a determination by a corrosion expert[2] regarding the potential for corrosion and appropriate corrosion protection needed to ensure the integrity of the tank system during its use;
- For underground tank system components that are likely to be adversely affected by vehicular traffic, a determination of the design and operational measures that will protect the tank system against potential damage; and
- Considerations made in the tank system design to ensure that tank foundations will maintain the load of a full tank, that tank systems will be anchored to prevent flotation or dislodgment, and that tank systems will withstand frost heave.

---

1. 40 CFR 264.192 and 265.192.

2. As defined in 40 CFR 260.10, 51 FR 25471, July 14, 1986.

2. What installation procedures must be followed for new tank systems?

The owner or operator of a new tank system must ensure that proper handling procedures are used in order to prevent damage to the system during installation. Prior to covering, enclosing, or placing a new tank system in use, an independent, qualified, installation inspector or an independent, qualified, registered, professional engineer, either of whom is trained and experienced in the proper installation of tank systems, must inspect the system for any weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, other structural damage, or signs of inadequate construction or installation.[3] In addition:

- Backfill material for new underground tanks must be noncorrosive, porous, and homogeneous and must be placed completely around the tank to ensure even support;
- All new tanks and ancillary equipment must be tested for tightness prior to being covered, enclosed, or placed in use. If the tank is found not to be tight, all repairs to remedy the leak(s) in the system must be made prior to being covered, enclosed, or placed into use;
- Ancillary equipment must be supported and protected against damage and stress caused by settlement, vibration, expansion, or contraction;
- If the Regional Administrator believes that other forms of corrosion protection are necessary in addition to the requirements referred to above, the owner or operator must provide that protection;
- Installation of corrosion protection which is field fabricated must be supervised by an independent corrosion expert; and
- The owner or operator must keep written statements on file at the facility from the qualified, independent, registered, professional engineers or installation inspectors who are required to certify the design and proper installation of tank systems.

---

3. 40 CFR 264.192(b) and 265.192(b).

IV. SECONDARY CONTAINMENT/VARIANCE PROCEDURE

1. What tanks and ancillary equipment must have secondary containment and when must secondary containment be provided?

All hazardous waste tanks and hazardous waste tank ancillary equipment must have secondary containment by a specified date except for:[1]

(1) Tanks that are used to store or treat hazardous waste containing no free liquids and that are situated inside a building with an impermeable floor (note that a concrete floor, unless covered by a sealer, is considered permeable);

(2) Tanks (including sumps) that serve as part of a secondary containment system to collect or contain releases of hazardous wastes;

(3) Aboveground piping (exclusive of flanges, joints, valves, and connections) that is visually inspected for leaks on a daily basis;

(4) Welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis;

(5) Sealless or magnetic coupling pumps that are visually inspected for leaks on a daily basis;

(6) Pressurized aboveground piping systems with automatic shutoff devices (e.g., excess flow check valves, flow metering shutdown devices, or loss of pressure activated shut-off devices) that are visually inspected for leaks on a daily basis; and

(7) Tanks and ancillary equipment for which a variance from secondary containment requirements has been granted (see question IV.3 for information on the variance procedure).

Exhibit 1 lists the types of tanks and the dates by which secondary containment must be provided.

Ancillary equipment is defined as any device used to distribute, meter, or control the flow of hazardous waste from its point of generation to a storage or treatment tank, between hazardous waste storage or treatment tanks to a point of disposal onsite, or to a point of shipment for offsite disposal. The ancillary equipment may include piping, fittings, flanges, valves, and pumps. All ancillary equipment (unless explicitly exempted - see the above list) must be provided with secondary containment in accordance with the schedule in §264.193(a) and §265.193(a). This includes piping used to carry hazardous waste from a process tank or area to a storage or treatment tank and any other equipment used to transfer the hazardous waste to or from other hazardous waste tanks.

---

1. 40 CFR 264.193(a), (f), (g), (h) and 265.193(a), (f), (g), (h).

2. What requirements apply to the design, installation, and operation of secondary containment systems?

In general, secondary containment systems must be designed, installed, and operated to prevent the migration of any wastes or accumulated liquids out of the system to the soil, ground water, or surface water during the use of the tank system. In addition, secondary containment systems must be able to detect and collect releases and accumulated liquids until the collected material is removed. At a minimum, secondary containment systems must be constructed of or lined with materials that are compatible with the waste held by the tank system, have sufficient strength and thickness to prevent failure, and be placed on a foundation capable of providing adequate structural support. A leak detection system must be provided that can detect the failure of either the primary or secondary containment structure or the presence of any release of hazardous waste or accumulated liquid in the secondary containment system within 24 hours. (The Regional Administrator can extend this limit if the owner or operator demonstrates that existing detection technologies or site conditions will not allow detection of a release within 24 hours.) The secondary containment system must also be designed or operated to drain and remove accumulated liquids. Accumulated liquids must be removed within 24 hours, or, if the owner or operator can demonstrate to the Regional Administrator that removal of accumulated liquids cannot be performed within 24 hours, such removal must be completed as quickly as possible to prevent harm to human health and the environment.[2]

The regulations provide some flexibility in defining acceptable methods for leak detection. In some cases, daily visual inspection will be allowed as a means to comply with the leak detection requirement. For example, accumulated liquid in a secondary containment system for an aboveground tank system may be detected by visual inspection. The term visual inspection, in turn, allows some flexibility in interpretation. Video monitoring can be used to monitor tank systems. In this case, a demonstration would need to show that video monitoring is equivalent to visual inspection (i.e., reliability, clarity, etc.) Of course, where cameras are used, contingency plans should address system failure (e.g., what happens when the lights go out).

Secondary containment for tanks must consist of one or more of the following devices: (1) an external liner, (2) a vault, (3) a double-walled tank, or (4) an equivalent device as approved by the Regional Administrator. For each of the first three devices, the regulations specify additional design requirements.[3]

External liner systems and vaults must be designed or operated to contain 100 percent of the capacity of the largest tank within its boundary and prevent run-on or infiltration of precipitation into the secondary containment system, unless additional capacity sufficient to contain precipitation from a 25-year, 24-hour rainfall event is provided.

---

2. 40 CFR 264.193(b) and (c) and 265.193(b) and (c).

3. 40 CFR 264.193(d) and (e) and 265.193(d) and (e).

EXHIBIT 1

DEADLINES FOR PROVIDING SECONDARY CONTAINMENT[4]

Tank Description	Deadline
All existing tank systems (regardless of age) used to store or treat hazardous waste identified by the following EPA hazardous waste numbers: F020, F021, F022, F023, F026, or F027.	January 12, 1989
Tank systems used to store or treat a waste that is defined as hazardous after January 12, 1987.	Within two years after the date that the waste is listed as hazardous waste (to determine secondary containment deadline, substitute the date handled material becomes a hazardous waste for "January 12, 1987" in the following deadline descriptions).
Existing tank systems of known and documented age.	Within two years after January 12, 1987, or when the tank system has reached 15 years of age, whichever comes later.
Existing tank systems for which the age cannot be documented:	Within eight years of January 12, 1987; but if the age of the facility is greater than seven years, secondary containment must be provided by the time the facility reaches 15 years of age, or within two years of January 12, 1987, whichever comes later.
New tank systems (construction began after July 14, 1986).	prior to putting the tank system into service.

4. 40 CFR 264.193(a) and 265.193(a).

External liners must also be free of gaps and be designed and installed to surround the tank completely such that both lateral and vertical migration are prevented. If concrete is used in the secondary containment unit, then the regulation for vaults would apply (i.e., impermeable interior coating or lining, water stops, etc. that are compatible with the store waste must be applied).

Vaults are also required to have chemical resistant water stops at all joints (if any), be provided with an impermeable interior coating or lining that is compatible with the stored waste and will prevent any waste from migrating into the concrete, have a means to prevent the formation and ignition of vapors in the vault if the waste is ignitable or reactive and may form ignitable or explosive vapor, and be provided with an exterior moisture barrier if the vault is subject to hydraulic pressure

Double-walled tanks must be designed as an integral structure so that the outer shell will retain any releases from the inner tank. If constructed of metal, the primary tank interior and the external surface of the outer shell must be cathodically protected and provided with a continuous leak detection system.

Secondary containment for ancillary equipment (e.g., trenching, jacketing, or double-walled piping) must satisfy the minimum requirements described above. Unlike the requirements for tanks, no particular methods are specified or required for ancillary equipment.[5]

3. Can an owner or operator receive a variance from the secondary containment requirement?

An owner or operator can receive either: (1) a technology-based variance or (2) a risk-based variance from the secondary containment requirement.[6]

Technology-based variance:[7] To receive a technology-based variance, the owner or operator must demonstrate to the Regional Administrator that alternative design and operating practices, together with location characteristics, will prevent migration of hazardous waste into ground or surface water at least as well as secondary containment. The key element of this variance is the ability of the owner or operator to contain releases from a tank system within an area under his control and clean up any release before it enters ground or surface waters.

---

5. 40 CFR 264.193(f) and 265.193(f).

6. 40 CFR 264.193(g) and 265.193(g).

7. See "Technical Resource Document for Obtaining Variances from the Secondary Containment Requirements for Hazardous Waste Tank Systems: Volume I - Technology-Based Variance," Feb. 1987, National Technical Information Service (NTIS), U S. Dept of Commerce, Springfield, Virginia 22161, (703) 487-4600, NTIS No. PB-87-158655, $24.95.

Risk-based variance:[8] To receive a risk-based variance, the owner or operator must demonstrate to the Regional Administrator that, in the event of a release from a hazardous waste tank system, the resulting level of contamination in the environment will not pose a substantial present or future hazard to human health or the environment. To do so, the applicant must demonstrate that as a result of environmental conditions at the site and the characteristics and concentrations of hazardous constituents present in the hazardous waste in the tank system, no substantial current or future hazard to human health or the environment will result due to either no exposure or an acceptable level of exposure to the hazardous waste. This variance provision is not available to owners or operators of new underground hazardous waste tank systems.

The factors that the applicant should address when preparing demonstrations for a variance from the secondary containment requirement include: the nature and quantity of the waste, a proposed alternate design or operation, the hydrogeologic setting of the facility, factors affecting the mobility of the wastes in the environment, the potential for human exposure and resulting health risks, the potential for damage to the environment, and the persistence of the potential effects.

Owners and operators must notify the Regional Administrator of their intention to conduct and submit a demonstration for a variance prior to the date that secondary containment must be provided. For existing tank systems, this notification must be made at least 24 months prior to the date that secondary containment must be provided. For new tank systems, notification must be made at least 30 days prior to entering into a contract for installing the tank system. As part of the notification, the owner or operator must submit a description of the steps necessary to complete the demonstration and a schedule for completing the steps. The demonstration for a variance must be completed and submitted to the Regional Administrator within 180 days after notification of the intent to conduct the demonstration was made. For new or existing interim status tank systems, the Regional Administrator will then notify the public of the demonstration for a variance from secondary containment and approve, or disapprove the request within 90 days of receiving the demonstration.[9] Review of variance demonstrations for permitted systems must follow the schedule and requirements for permit issuance, modification, or reissuance as described in 40 CFR Parts 270 and 124.

For both the technology-based and risk-based variance, the burden is on the applicant to demonstrate that a variance is justified. If the Agency is

---

8. See "Technical Resource Document for Obtaining Variances from Secondary Containment Requirements for Hazardous Waste Tank Systems: Volume II - Risk-Based Variance," Feb. 1987, National Technical Information Service (NTIS), U.S Dept. of Commerce, Springfield, Virginia 22161, (703) 487-4600, NTIS No. PB.87-158663, $36.95.

9. See 40 CFR 265.193(h)(4) specific notice, public hearing and public comment requirements.

not persuaded that the information provided supports the necessary determination, the variance will be denied.

To assist in better defining the variance provisions and requirements, EPA has developed a technical resource document concerning the secondary containment variance (see footnotes 7 and 8).

If a release of hazardous waste occurs from a tank system which has been granted a variance from the secondary containment requirement and the release migrates beyond the zone of engineering control (as established in the variance), the o/o must comply with the requirements for responding to leaks or spills (see 40 CFR 264.196(a), (b), (c), and (d) and 265.196(a), (b), (c), and (d)). The owner or operator must conduct activities necessary to prevent the migration of hazardous waste or hazardous constituents to groundwater or surface water. If contaminated soil cannot be decontaminated or removed or if groundwater has been contaminated, the o/o must close the tank system using the closure procedures for a landfill and conduct appropriate closure and post-closure care (see 40 CFR 264.197(b) or 265.197(b)). If the tank system can be repaired, replaced, or reinstalled, the o/o must provide the tank system with secondary containment or reapply for a variance.[10]

4. What are "temporary tanks" and are the secondary containment requirements applicable?

The term "temporary tank" used in the preamble to the July 14, 1986 Federal Register (51 FR 25422) referred to any tank system that is located or brought onsite for the temporary storage of hazardous waste in response to an emergency or catastrophic event. To classify a tank system as a temporary tank system, it must be used in response to an unexpected occurrence. A temporary tank system would be subject to all applicable requirements of Parts 264, 266, and 270 as provided in an emergency permit under §270.61 or would be exempted under §§264.1(g)(8) and 265.1(c)(11). Unless a tank system is brought on-line in immediate response to a discharge which is neither routing or systematic, it is subject to all applicable requirements for hazardous waste tank systems, including secondary containment. However, a tank system that itself serves as part of a secondary containment system used to collect or contain releases of hazardous waste from the primary tank system does not need to have secondary containment (see §§264.190(b) and 265.190(b)). Generally speaking, any tank system into which hazardous waste is routinely and systematically introduced, regardless of frequency or duration of storage, is not considered either a temporary tank or part of the secondary containment system and therefore must be provided with secondary containment (see 51 FR 25422; July 14, 1986).

A tank that is designated as a standby tank for routine maintenance clean-outs of sludge or residual material or integrity inspections is not considered to be a temporary tank. Accordingly, such tanks are not exempt from the requirements for hazardous waste tank systems. (They do not constitute unexpected occurrences.)

---

10. 40 CFR 264.193(g)(4) and 265.193(g)(4).

Additionally, a tank system that is installed in parallel with another tank system (where one system is intended to be brought on-line during routine and systematic shutdown of the other system) does not constitute a temporary tank system. Unlike the previous example where the standby tank was used solely for the purpose of secondary containment, this example of "standby tank" would need to have secondary containment since it would serve the function of primary containment of the waste. Thus, such tanks would not be exempt from secondary containment requirements.

In some cases, such as where there is complex piping and manifolding of tank systems, precise information may be required to determine whether a tank system is a temporary tank system or is part of a secondary containment system. In these instances, the permit applicant should consult with the EPA Region or State permitting authority, as appropriate.

5. Is secondary containment required for pressurized aboveground piping systems that are provided with automatic shut-off devices?

As now written, §§264.193(f)(4) or 265.193(f)(4) would exempt pressurized piping systems with automatic shut-off devices from the secondary containment requirement. Furthermore, this provision would would allow this exemption even if welded flanges, welded joints, welded connections, sealless valves, and sealless or magnetic coupling pumps are not used.

The Agency has been reconsidering the ramifications of this provision, as currently written. EPA may have over-estimated the effectiveness of automatic shut-off devices. Although these devices should certainly limit the quantity of waste released in case of a substantial failure somewhere in the piping system (e.g., pipe rupture), they would unlikely have any effect on reducing the number or size of releases in piping systems due to small or slow leaks at valves, connections, flanges, etc.

It was not EPA's intent to prescribe less importance to smaller than major leaks in pressurized piping systems. In fact, such less than major leaks would be of greater concern in pressurized piping systems compared to nonpressurized systems due to the potential to release larger quantities of hazardous waste.

Thus, the Agency believes that it may be prudent to require all aboveground piping systems, pressurized as well as nonpressurized, even if automatic shut-off devices are used, to use welded joints, sealless valves, sealless or magnetic coupling pumps, etc., in order to be exempted from the secondary containment requirement. In fact, the Agency is contemplating that automatic shut-off devices should likewise be welded so as not to be a source of leakage. Using this approach, automatic shut-off devices might, rather than serve as an means for a piping system to be exempted from secondary containment, would be used to protect against catastrophic releases and serve as a means to limit the size of the secondary containment system(s), where needed. EPA is considering proposing such an amendment to the tank system standards.

V. OPERATING REQUIREMENTS AND RESPONSES TO LEAKS

1. What are the operating requirements for owners and operators of tank systems?

Owners and operators of interim status and permitted tank systems must adhere to the following operating procedures:[1]

- Tank systems must not be filled with hazardous wastes or treatment reagents which could cause the tanks, ancillary equipment, or containment systems to rupture, leak, corrode, or otherwise fail.

- The owner or operator must use appropriate controls and practices to prevent spills and overflows from tank systems. These include, at a minimum: (1) spill prevention controls; (2) overfill prevention controls; and (3) maintenance of freeboard.

- The owner or operator must respond if a leak or spill occurs (see question V.3).

2. What portions of the tank system must the owner or operator inspect and how often must these inspections occur?

The owner or operator has four major responsibilities for inspections.[2] First, at least once each operating day he must inspect aboveground portions of the tank system for corrosion or any release of waste and inspect data from monitoring and leak detection equipment. The construction materials and the area around the accessible portion of the tank system, including the secondary containment system, must also be inspected in order to detect erosion or releases of waste. Second, the owner or operator must develop and follow a schedule for inspecting overfill controls. Third, the owner or operator must inspect cathodic protection systems if present; and the proper operation of the cathodic protection system must be confirmed within six months of its installation, and checked annually thereafter. In addition, sources of impressed current must be inspected and/or tested as appropriate, but not less often than every other month. Finally, the owner or operator must document in the operating record of the facility that the required inspections were completed.

---

1. 40 CFR 264.194 and 265.194.

2. 40 CFR 264.195 and 265.195.

3. What procedures must an owner or operator follow to respond to a leaking or unfit-for-use tank system?

A tank system is "unfit-for-use" if it has been determined through an integrity assessment or other inspection to be no longer capable of storing or treating hazardous waste without posing a threat of release to the environment (see §260.10). If a tank system is unfit-for-use, or if a leak occurs from a tank system or secondary containment system, the owner or operator must:[3]

- Immediately stop the flow or addition of wastes into the tank system or secondary containment system.
- Promptly remove the waste from the tank system or secondary containment system. Removal procedures are as follows:
  a. Releases from the primary tank system: Within 24 hours, the owner or operator must remove as much of the waste as is necessary to prevent further release of hazardous waste to the environment. If the owner or operator can demonstrate that it is not possible to remove the waste within 24 hours, then the wastes must be removed at the earliest practicable time.
  b. Releases to the secondary containment system: Within 24 hours, or in as timely a manner as is possible to prevent harm to human health and the environment, the owner or operator must remove all wastes from the secondary containment system.
- Prevent further migration of the leak or spill to soils or surface water and remove and properly dispose of any visible contamination of the soil or surface water.
- Notify the Regional Administrator (see question V.4 for notification requirements). Releases that are contained within the secondary containment system need not be reported.

4. What must an owner or operator do to notify the EPA of a release from a tank system?

If a leak or spill of hazardous waste is less than or equal to one pound, and if it is immediately contained and cleaned up, the owner or operator does not have to notify EPA. Otherwise, the following notification requirements apply:[4]

---

3. 40 CFR 264.196 and 265.196.

4. 40 CFR 264.196(d) and 265.196(d).

- Within 24 hours after a leak is detected, an owner or operator must notify the Regional Administrator.[5]

- Within 30 days after a leak is detected, an owner or operator must submit a report to the Regional Administrator with the following information:

  a. Likely migration route of the leaked or spilled hazardous material;

  b. Characteristics of the surrounding soil (i.e., soil composition, geology, hydrogeology, and climate);

  c. Results of any monitoring or sampling conducted in connection with the release (if available). If results are not available until after 30 days, they must be submitted to the Regional Administrator as soon as they become available. (In any case, the report still must be made within 30 days. While reporting, the owner or operator should note that data will be delayed.);

  d. Proximity of the release to downgradient drinking water, surface water, and population areas; and

  e. Description of response actions taken or planned.

5. What must an owner or operator do to return a leaking tank system to service?

If the tank system was taken out of service in response to a spill or overflow that did not damage the integrity of the system, the tank system may be returned to service as soon as the released waste is removed. However, if the cause of the release was a leak from the primary tank system into the secondary system, then the tank must be repaired before it can be returned to service.[6]

If the leak occurred from a part of the system that did not have secondary containment, then secondary containment must be provided for that part of the system before returning it to service, unless the leak was from an aboveground component that can be visually inspected. In such case, the system can be returned to service without secondary containment after the component is repaired. If the repair is extensive, (e.g. installation of an internal liner or repair of a ruptured primary or secondary containment vessel), then the tank system may not be returned to service until an independent, qualified, registered, professional engineer certifies that the repaired system is capable of handling

---

5. This report requirement is satisfied if the release is reported pursuant to 40 CFR Part 302.

6. 40 CFR 264.196(e) and 265.196(e).

hazardous wastes without a release for the intended life of the system.[7] If a component is replaced, it must satisfy the requirements for new tank systems or components (see questions III.1 and III.2).

If the leak occurred in any portion of a tank system that cannot be visually inspected, (e.g., the bottom of an inground or onground tank), then the entire portion of the tank system that cannot be inspected must be provided with secondary containment before it is returned to service.

6. What special requirements apply to the management of ignitable or reactive wastes?

Ignitable or reactive wastes must not be placed in tank systems except in the following three cases:[8]

- The waste is treated, rendered, or mixed before or immediately after placement in the tank system so that the waste is no longer ignitable or reactive, and so that certain reactions are prevented (i.e., reactions causing extreme heat or pressure; also, see question V.7);
- The waste is stored or treated in such a way that it is protected from conditions which may cause the waste to ignite or react; or
- The tank system is used only for emergencies.

The owner or operator of a facility where ignitable or reactive waste is stored or treated in tanks must maintain protective distances between the waste management area and public ways, streets, etc.

7. What special requirements apply to the management of incompatible wastes?

Incompatible wastes or materials must not be placed in the same tank system unless the owner or operator has taken precautions to prevent reactions that generate extreme heat or pressure, produce uncontrolled toxic gases in sufficient quantities to threaten human health or the environment, produce uncontrolled flammable fumes in sufficient quantities to pose a risk of fire, or damage the structural integrity of the device or facility. Similarly, hazardous wastes must not be placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless the owner or operator has taken precautions to prevent the reactions discussed above.[9]

---

7. 40 CFR 264.196(f) and 265.196(f).

8. 40 CFR 264.198 and 265.198.

9. 40 CFR 264.199 and 265.199.

8. When must waste analyses and trial tests be conducted?

An owner or operator of a tank system should conduct general waste analysis before he treats, stores, or disposes of any hazardous waste.[10] However, 40 CFR 265.200 now requires additional waste analysis and trial tests for interim status tank systems whenever a tank system is used to treat chemically or store a hazardous waste that is substantially different from waste previously treated or stored in that tank system, or whenever a tank system is used to treat chemically a hazardous waste with a substantially different process than was previously used in the tank system.[11] In such a circumstance, the owner or operator must obtain a detailed chemical and physical analysis of a representative sample of the waste, and he must follow a written waste analysis plan which is kept at the facility. However, if an owner or operator of a interim status tank system can obtain written information on similar waste under similar operating conditions to show that treatment or storage will meet general operating requirements, he is not required to perform waste analysis and trial tests.

The July 14 tank rule does not require owners or operators of 90-day accumulation tank systems to conduct waste analyses and trial tests.[12] Unlike off-site commercial hazardous waste storage and treatment facilities where a wide variety of hazardous wastes are managed, generators generally produce and would thus store or treat wastes that are relatively consistent in terms of their physical/chemical properties. Thus, EPA does not believe that waste analysis and trial tests must be conducted by generators of hazardous waste because of their familiarity with the wastes they generate.

---

10. 40 CFR 264.13 or 265.13.

11. 40 CFR 265.200.

12. 40 CFR 262.34(a)(1).

VI. CLOSURE AND POST-CLOSURE CARE

1. When must an owner or operator close a tank system?

A tank system must be closed in either of two situations. First, when an owner/operator expects to cease handling hazardous waste in a tank system, the owner or operator must notify EPA 45 days prior to the date on which he "expects to begin closure" that he intends to close the tank system. The owner or operator must begin closure of the tank system within 30 days after the final volume of hazardous waste is placed in the tank system. If the owner or operator can show that there is a "reasonable possibility" that the tank system will receive additional volumes of hazardous waste, closure may be delayed until no later than one year after receipt of the most recent volume of hazardous waste. Extensions beyond the one-year deadline may be granted at the discretion of the Regional Administrator.[1]

Second, if a tank system is found to be leaking or unfit-for-use, the owner or operator must close the tank system unless he can demonstrate that: (1) the cause of the leak was a spill that has not damaged the integrity of the tank system, or (2) the tank system can be repaired to prevent additional leaks.[2] In the case of a tank system that requires repair, if the leak from the tank system occurred from a component that did not have secondary containment, then the owner or operator must provide that component with secondary containment before it is returned to service. However, if the leak occurred from an aboveground portion of the tank system that can be inspected visually, the tank system can be returned to service without secondary containment, even if the repair is extensive. However, any extensive repairs conducted on a tank system must be certified and any replacement equipment used in such repairs must satisfy the requirements for new equipment. If any of the preceding requirements cannot be met, the tank system must be closed.

2. What general procedures must be followed by an owner or operator when closing a tank system?

The owner or operator must remove or decontaminate all waste residues, contaminated system components (i.e., secondary containment liners or vaults), contaminated soil, and structures and equipment contaminated with hazardous waste.[3] Any contaminated soil or equipment removed during closure must be managed as hazardous waste. This decontamination requirement includes all components of the tank system, not just the tank. The decontamination requirement also applies explicitly to all soils contaminated by releases from the unit, including saturated soils. Although the required level of decontamination for soils and equipment is not clearly defined at this time,

---

1. 40 CFR 264.112(d) and 265.112(d).

2. 40 CFR 264.196(e) and 265.196(e).

3. 40 CFR 264.197 and 265.197.

EPA is currently developing policy on the broad issue of defining acceptable levels of contamination. Some discussion of clean closure can be found in the preamble to a final rule amending the Part 265 closure requirements (see 53 FR 8704-8707; March 19, 1987).

If the owner or operator demonstrates that not all contaminated soils can be practicably removed or decontaminated at closure, then the owner or operator must close the tank system and perform post-closure care in accordance with the requirements applying to landfills.[4] (See questions VI.5 and VI.6.)

3. What information must be contained in the closure plan and cost estimate for closing a tank system?

All tank systems must have a closure plan and a cost estimate for closure.[5] The closure plan can pertain to either a single tank system or be a part of a larger plan for an entire facility. The closure plan must identify the steps necessary to perform closure of the tank system at any time during its active life.[6] The closure plan must include, at least:

- A description of facility conditions, including tank systems;
- The closure schedule for the facility including partial closure schedules for individual tank systems;
- The procedures for removing all waste inventory from the tank system and procedures for removing or decontaminating all tank system components;
- The procedures for removing or decontaminating all secondary containment structures and contaminated soils or additional equipment at the site;
- A description of the security systems at the site; and
- The procedures for certifying closure of the tank system at final closure of the facility including tests to be conducted.

---

4. 40 CFR 264.197(b) and 265.197(b).

5. 40 CFR 264.112 and 265.112.

6. For information on closure and post-closure plans and cost estimates, see "RCRA Guidance Manual for Subpart G Closure and Post-Closure Care Standards and Subpart H Cost Estimating Requirements," February 1987, Available from NTIS, (703) 487-4600, NTIS No. PB-87-158978, EPA/580-SW-87-010.

In addition, the owner or operator must have a detailed written estimate,[7] in current dollars, for the cost of closing the tank system, including:

- The cost of final closure at the point in the tank system's active life when closure would be most expensive; and
- The costs to the owner or operator for hiring a third party to close the tank system.

The estimate may not incorporate any salvage value from the sale of hazardous waste or the sale of equipment. The owner or operator must adjust the estimate for inflation annually during the active life of the facility (and submit it to EPA or the State). Finally, the owner or operator must keep the latest copy of the closure plan and cost estimate at the facility during its operating life.

4. When must an owner or operator prepare contingent closure and post-closure plans for closure as a landfill and what information must these contingent plans contain?

Owners and operators of permitted and interim status tank systems that do not have secondary containment and are not exempt from the secondary containment requirement must prepare a contingent closure plan and a contingent post-closure plan, in addition to the closure plan for closing as a storage unit.[8] The contingent closure plan is to describe the closure activities to be followed if the tank system must be closed as a landfill and should address the additional requirements for closing as a landfill. The contingent post-closure plan must address the monitoring and maintenance activities to be conducted during the post-closure care period.

The owner or operator must also prepare cost estimates that reflect the costs of complying with the contingent closure and post-closure plans, if those costs are greater than the costs of complying with the closure plan prepared for the expected closure. When this is done, the owner or operator must demonstrate financial assurance for closure and post-closure care based on the cost estimates for contingent closure and post-closure care.

---

7. For information on preparing cost estimates: "Guidance Manual: Cost Estimates for Closure and Post-Closure Care Plans: Vol. I - Treatment and Storage, NTIS PB #87-158994; Vol. II - Land Disposal, NTIS PB #87-159000; Vol. III - Unit Costs, NTIS PB #87-159018; Vol. IV - Documentation, NTIS PB #87-159026; and all volumes at NTIS PB #87-158978.

8. 40 CFR 264.197(c) and 265.197(c).

5. When must an owner or operator close a tank system as a landfill?

If an owner or operator of a tank system demonstrates to the Regional Administrator that all contaminated soils can not be practicably removed from the site of the tank system or decontaminated at the time of closure, then the owner or operator must close the tank system in the same manner as a landfill (see 40 CFR 264.310 and 265.310).[9] Once this determination is made, the closure and post-closure requirements that apply to landfills apply to the tank system.

6. If a tank system is closed as a landfill, what procedures must be followed?

If the owner or operator of the tank system has prepared contingent closure and post-closure plans (and the plans have been approved by EPA or the State), then the activities in those plans must be followed, including procedures for capping the site, installing ground-water monitoring wells, and preparing for long-term monitoring and maintenance activities.[10] If a tank system that was not subject to the contingent closure and post-closure plan requirement (i.e., a tank system with secondary containment) is required to close as a landfill, the owner or operator must revise the unit's closure plan to reflect closure as a landfill and prepare a post-closure plan and permit application. If closure has not yet begun, the revised closure plan must be submitted within 60 days after the date that it is determined that the tank system must be closed as a landfill. If the determination is made during closure, the revised closure plan must be submitted within 30 days after the determination. The post-closure plan should be drafted and submitted for approval within 90 days after the determination that the site must be closed as a landfill.[11]

In addition, cost estimates must be adjusted to account for the new post-closure plan and modified closure plan activities. For interim status tank systems, the cost estimates must be revised no later than 30 days after a revision has been made to the closure plan or a post-closure plan is prepared. For permitted tank systems, the cost estimates must be revised no later than 30 days after the Regional Administrator has approved a request to modify the closure plan.[12] Financial assurance in accordance with the revised cost estimates must also be demonstrated by the owner or operator.

---

9. 40 CFR 264.197(b) and 264.197(b).

10. 40 CFR 264.197(c) and 265.197(c) - see 40 CFR 264.310 and 265.310 for closure and post-closure requirements for landfills.

11. 40 CFR 264.118 and 265.118.

12. 40 CFR 265.142 and 265.144.

7. If an owner/operator plans to install secondary containment per the schedule in §§264.193(a) or 265.193(a), must the owner/operator prepare the contingent closure and contingent post-closure plans?

Yes, the contingent closure and contingent post-closure plans are required for all tanks not having secondary containment meeting the requirements of §§264.193 or 265.193, even if, the owner/operator is planning installation of secondary containment. The plans would be required until appropriate secondary containment is installed.

APPENDIX A

TECHNICAL AND GUIDANCE MATERIALS CONCERNING TANK SYSTEM MANAGEMENT

The following compilation lists reference materials that may assist owner/operators and other interested persons in compling with the requirement for the management of hazardous waste tank systems.

The RCRA Hotline at (800) 424-9346 can provide information on the availability of these documents.

Title	Description	Reference No. and Date
Technical Resource Document for Storage and Treatment of Hazardous Waste in Tank Systems	Describes and provides information concerning the technical requirements brought about by the July 14, 1986 tank system regulatory amendments	NTIS # PB-87-134391 EPA/530-SW-86-044 December 1986
Technical Resource Document for Obtaining Variances from Secondary Containment Requirements for Hazardous Waste Tank Systems: Volume I - Technology-Based Variance	Describes the tank technologies, operating practices, and location characteristics that may allow for a variance from the secondary containment requirement	NTIS # PB-87-158655 February 1987
Technical Resource Document for Obtaining Variances from Secondary Containment Requirements for Hazardous Waste Tank Systems: Volume II - Risk-Based Variance	Describes the environmental conditions and waste characteristics that, in combination, pose no or low risk to human health and the environment in the event of a release and may allow for a variance from the secondary containment requirement	NTIS # PB-87-158663 February 1987

Title	Description	Reference No. and Date
Permit Applicant's Guidance Manual for the General Facility Standards	Guidance for permit applicants addressing general information requirements of 270.14 (b)(1-12,19) and the relevant 264 standards	EPA # SW-968 October 1983
RCRA Guidance Manual for Subpart G Closure and Post-Closure Care Standards and Subpart H Cost Estimating Requirements	Outlines requirements for closure and post-closure care of units and provides checklists for closure and post-closure plans	PB # 87-158978 February 1987
Guidance Manual Cost Estimates for Closure and Post-Closure Care Plans	Guidance and checklists for preparing closure and post-closure cost estimates	February 1987
Waste Analysis Plan Guidance Manual	Guidance on how to prepare and evaluate waste analysis plans	GPO # 055-000-00244-4 September 1984
Test Methods for Evaluating Solid Waste, 3rd ed.	Technical information on testing of hazardous waste	GPO # 955-001-00000-1 EPA # SW-846 February 1987
A Guide for Estimating the Incompatibility of Selected Hazardous Waste Based on Binary Chemical Mixtures	Provides method for determining the compatibility of most binary combinations of hazardous wastes	Available through ASTM Designation # P-168 March 1986
Evaluating Cover Systems for Solid and Hazardous Waste	Technical Resource Document	EPA # SW-867 GPO # 055-000-00228-2 1982
Landfills and Surface Impoundments Performance Evaluation	Technical Resource Document	EPA # SW-869 GPO # 055-000-00233-9 1983
Closure of Hazardous Waste Surface Impoundments	Technical Resource Document	EPA # SW-873 GPO # 055-000-00227-4 1982

Other References

Haxo, H.E , R.S. Haxo, N A. Nelson, P.P. Haxo, R.M. White, and S. Dakessian. 1986. Liner Materials Exposed to Toxic and Hazardous Wastes. Waste Management and Research. 4:247-264.